REMARKS/ARGUMENTS

Reconsideration of this application is respectfully requested in view of the foregoing amendments and discussion presented herein.

1. Objection to Claim 5.

Claim 5 has been amended to correct various informalities pointed out by the Examiner.

2. Rejection of Claims 1 and 5-14 under 35 U.S.C. § 102(b).

Claims 1 and 5-14 were rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Dennis et al. (U.S. No. 2004/0076681). Such rejections are traversed as follows:

(a) Claim 1. Claim1 recites, among other elements, a fluidic nanotube comprising a non-carbon, hydrophilic, tubular member having first and second ends, and an inner bore between said first and second ends. In particular, the tubular member has a non-porous inner wall. Such structure is not present in the reference cited by the Examiner.

The advantages of the non-porous nanotubes, as taught by the present invention and recited in Claim 1, can be appreciated with reference to paragraph [00200] and FIGS. 4A-11 of the present application. Unlike the porous nanotubes formed by existing processes such as that disclosed in Dennis et al., the non-porous nanotubes of the present invention are robust and have structural integrity, making their use ideal for single nanocapillary applications, and thus satisfy the requirements for nanofluidic sensing applications, as well as other nanotube and nanofluidic applications.

As pointed out by the Examiner (see page 4 of the Office Action dated December 2, 2005), the Dennis et al reference discloses silica nanotubes prepared using sol-gel template synthesis (see paragraphs [0056] and [0065]). As explained in paragraphs [0012] and [0014] of the present application, silica nanotubes that have been synthesized using a sol-gel coating technique are formed within the pores of porous alumina membrane templates. Such nanotubes, which are prepared at low

temperature, have porous walls and are relatively fragile.

In addition, once the templates are removed, the silica nanotubes will generally bundle up and become less oriented. Thus, they are generally amorphous, polycrystalline and anisotropic structures, e.g. the tube dimensions have different values when measured in different directions. This also applies to silica nanotubes prepared at low-temperature using other templates.

Thus, the Dennis et al. reference only teaches use of a process that generates porous nanotubes. The Applicants were unable to find any discussion or suggestion of a non-porous walled nanotube in the Dennis et al. reference, nor any process by which a non-porous nanotube could be generated.

For the foregoing reasons, the above-cited reference fails to teach or suggest a non-porous walled nanotube as described in Claim 1, and therefore the rejection of Claim 1, and Claims 5-14 dependent therefrom, should be removed.

(b) Claims 5-14. In addition to being patentable over the cited reference as indicated above, Claims 5-14 all each recite additional elements which are not found in the cited reference.

For example, Claim 5 recites a nanotube formed by the steps comprising: forming a core material; depositing a nanotube material over said core material; and removing said core material. The Dennis et al. reference is devoid any discussion of a nanotube formed by such a process.

On page 5 of the Office Action, the Examiner recites various case law suggesting that "it is the patentablility of the final product per se which must be determined in a "product by process" claim and not the patentability of the process..." However, as explained above, the non-porous nanotube of Claim 1 is novel, and not found nor suggested in the Dennis et al. reference or existing processes. Support for the process steps of Claim 5 can be found with reference to FIGS. 4A-4C, and FIG. 11 illustrating successful generation of a non-porous nanotube produced by the process of the present invention. Thus, the process steps of Claim 5 generate nanotubes that are

distinct from the porous tubes generated by the processes of the Dennis et al. reference and the existing art. In addition, the processes disclosed in Dennis et al. are incapable of producing non-porous nanotubes as recited in Claim 1.

Furthermore, Claim 10 recites a nanotube material that is single-crystalline. The Dennis et al. reference is absent any discussion of a single-crystalline nanotube structure. Rather, the processes disclosed in Dennis et al. generate polycrystalline nanotubes (See paragraphs [00144] and [00147] of the present application). Thus, Claim 10 recites a novel nanotube structure that is not taught nor suggested by the cited art.

Still further, Claim 13 recites a nanotube material that has a sufficiently similar crystalline structure and lattice constant as the material selected for said core material to allow epitaxial growth of said nanotube material on said core material. The benefits of expitaxial growth and structural orientation can be seen with respect to FIGS. 5A, 5B, FIG 13B, and paragraph [00146] of the present invention. Nanotubes exhibiting epitaxial growth are not taught or suggested in the cited art.

Therefore, the Applicant respectfully submits that Claims 5-14 recite one or more elements not found in the cited reference and are not anticipated by said reference.

3. New Claims 110-130.

(a) Claims 110-118. New Claims 110-118 all depend from allowable base Claim 1, and thus are in condition for allowance. In addition, Claims 110-118 recited additional elements not found in the cited art. For example, Claims 111 and 112/120 recite an inner wall is substantially continuous, or having a substantially uniform diameter, respectfully. Support for these amendments can be found with reference to FIGS. 4A-4C and 11 and paragraphs [00199] and [00200] of the present application. The robust non-porous nanotubes with continuous and uniform inner diameters are advantageous in applications such as nanoscale electronics, optoelectronics, and biochemical sensing applications. Because the Dennis et al. reference does not

disclose non-porous nanotubes, these elements are not found in the above-cited reference.

In addition, Claims 113 and 117 recite a nanotube that is substantially isotropic. This limitation is not taught nor suggested in the Dennis et al. reference, as the sol-gel template synthesis process describes therein produces generally anisotropic, amorphous, polycrystalline nanotube structures (see paragraph [00144] of the present application).

Furthermore, Claims 114 and 118 recite a nanotube having an inner wall that is substantially seamless. Support for this limitation may be found with respect to paragraph [00144] of the present application.This limitation is not taught nor suggested in the Dennis et al. reference, as the porous nanotube structures produced by the sol-gel template synthesis process are not conducive to such a limitation.

(b) Claims 119-130. New independent Claim 119 recites a method of forming a non-carbon, hydrophilic nanotube, comprising the steps of forming a core material, depositing a nanotube material over the core material, and removing the core material to form a tubular member having an inner bore between first and second ends of the tubular member. As explained above, Dennis et al. discloses a sol-gel coating technique that forms silica nanotubes within the pores of porous alumina membrane templates. Thus, the method disclosed in Dennis et al. is distinctly different from the limitation recited in Claim 119. Therefore, Claim 119, and Claims 120-130 dependent therefrom, are novel over the cited art.

4. Amendments Made Without Prejudice or Estoppel.

Notwithstanding the amendments made and accompanying traversing remarks provided above, Applicants have made these amendments in order expedite allowance of the currently pending subject matter. However, Applicants do not acquiesce in the original ground for rejection with respect to the original form of these claims. These amendments have been made without any prejudice, waiver, or estoppel, and without forfeiture or dedication to the public, with respect to the original subject matter of the

claims as originally filed or in their form immediately preceding these amendments. Applicants reserve the right to pursue the original scope of these claims in the future, such as through continuation practice, for example.

5. Conclusion.

Based on the foregoing, Applicants respectfully request that the various grounds for rejection in the Office Action be reconsidered and withdrawn with respect to the presently amended form of the claims, and that a Notice of Allowance be issued for the present Application to pass to issuance.

In the event any further matters remain at issue with respect to the present application, Applicants respectfully request that the Examiner please contact the undersigned below at the telephone number indicated in order to discuss such matter prior to the next action on the merits of this application.

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Respectfully submitted,

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